

ABSTRACT OF THE DISCLOSURE

In the past, storage unit (disk drive) failures were the primary cause of data loss in a storage system. With higher unit reliability and higher bit density, random bit errors have become the primary cause of data loss. Most data recovery mechanisms treat reconstruction of redundant information on the same level as data reconstruction. In reality, data reconstruction is more important and asymmetry between data protection and redundant information protection provides trade-offs of data recoverability against performance. The present invention provides data recovery from both a first number of data block failures due to random bit failures and a second number of storage unit failures while providing update write performance equivalent to data protection mechanisms with lower data recovery capabilities. The level protection from number of data block failures, the number of unit failures, and update write performance are parameterized to select a desired combination.